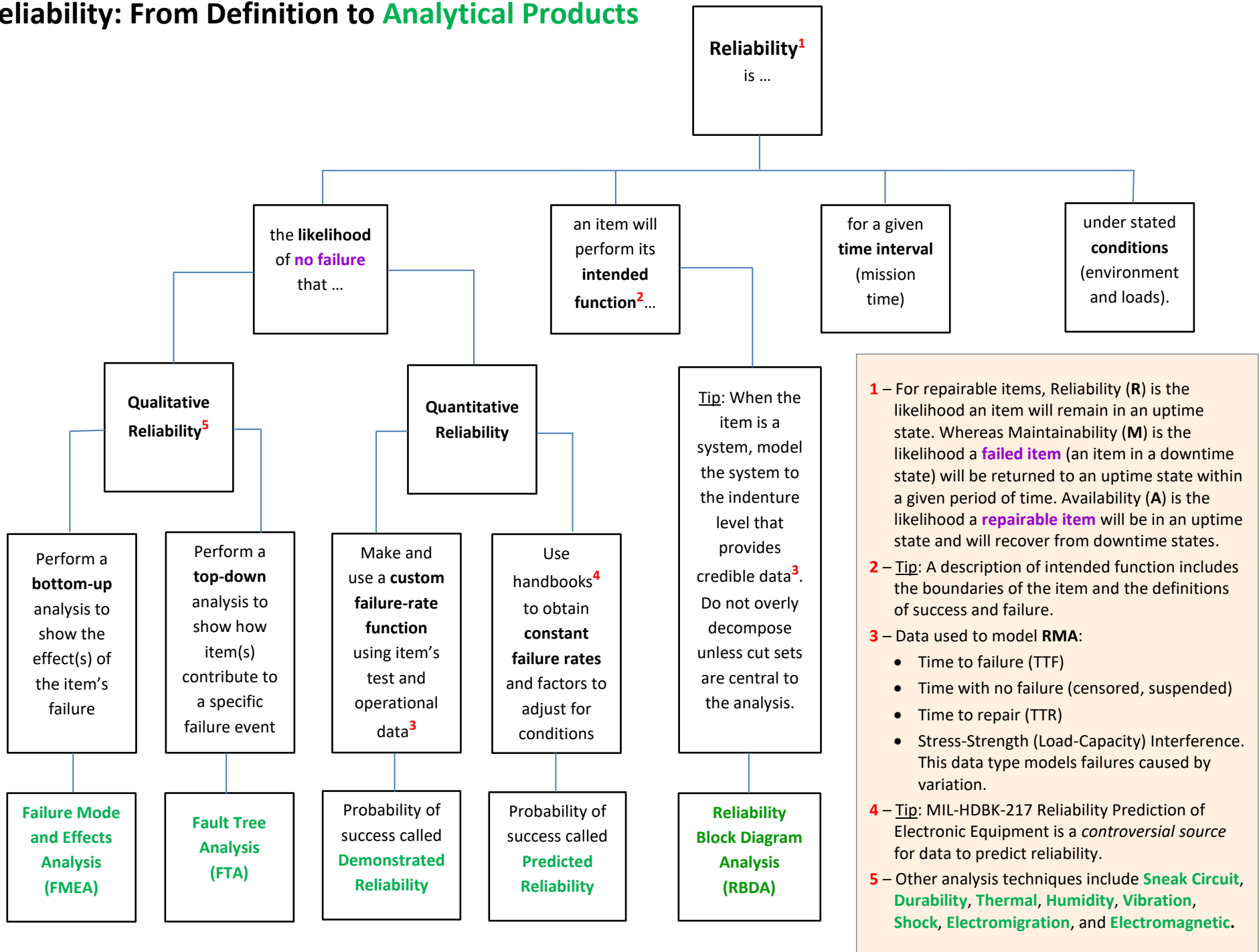


# Reliability: From Definition to Analytical Products



**1** – For repairable items, Reliability (**R**) is the likelihood an item will remain in an uptime state. Whereas Maintainability (**M**) is the likelihood a **failed item** (an item in a downtime state) will be returned to an uptime state within a given period of time. Availability (**A**) is the likelihood a **repairable item** will be in an uptime state and will recover from downtime states.

**2** – Tip: A description of intended function includes the boundaries of the item and the definitions of success and failure.

**3** – Data used to model **RMA**:

- Time to failure (TTF)
- Time with no failure (censored, suspended)
- Time to repair (TTR)
- Stress-Strength (Load-Capacity) Interference. This data type models failures caused by variation.

**4** – Tip: MIL-HDBK-217 Reliability Prediction of Electronic Equipment is a *controversial source* for data to predict reliability.

**5** – Other analysis techniques include **Sneak Circuit, Durability, Thermal, Humidity, Vibration, Shock, Electromigration, and Electromagnetic.**